TRMM Flight Operations Monthly Status Review (MSR)

January 11, 2002

FOT Subsystem Overview

- Operations Status
  - Flight Ops Summary - Lou Kurzmiller
  - Electrical - Andy Calloway
  - Thermal - Dave Sepan
  - RCS - Dave Sepan
  - Power & Deployables - Justin Knavel
  - ACS & FDS / C&DH - Mark Fioravanti
  - RF / Comm - Nega Berhanu
  - LIS - Nega Berhanu
  - CERES & VIRS - Mark Fioravanti
  - TMI - Dave Sepan
  - PR - Andy Calloway
  - Ground System - Andy Calloway
  - Upcoming Activities - Andy Calloway

Flight Operations Summary

- Supported 561 SN events in December
  - 1 Yaw Maneuver to +X
  - 8 Delta-V Maneuvers
- No Anomaly Rpts, 1 Event Rpt & 4 Generic Late Acqs
  - ER #255: SN Event Changed (TDS to TDE) by NCC

Flight Operations Summary

- Notable Events
  - Continued support of ACS pointing & control concern
- FOT continues at full staff.
- No problems during the holiday or at the year rollover.

Thermal / Electrical Subsystems

- The Thermal subsystem remains nominal
  - No operational issues since arrival at 402.5 km

- The Electrical subsystem remains nominal
  - No operational issues since arrival at 402.5 km

RCS Subsystem

- RCS performed 8 successful Delta-V maneuvers (#356 - #363)
  - Current fuel remaining is 316 kg.
  - Current High Pressure Transducer level is 225.0 psia.
- The current EOL estimate at 402.5 km is August 2003 using 157 kg of fuel as a baseline for controlled re-entry.
- Upcoming Events
  - Continue to review and train with Delta-H procedure, EOL scripts, and the "one-shot" procedure.
  - Review all required steps for a 30+ minute Delta-V maneuver and test with the simulator.

Power Subsystem

- Auto-SPRU enabled from 01-337 (December 4th) to 01-344 (December 10th) to prevent overcharging at high Beta angles.
- On 01-348 (December 14th), TSMs 33 and 34 (Battery 1 and 2 End Of Day (EOD) State Of Charge (SOC) < 95%) tripped due to the annular solar eclipse. The solar eclipse caused the Solar Array Current to drop below the Night threshold so the Day/Night flag toggled for day to night, which erroneously fixed the EOD Battery SOC to 86%. This situation was anticipated. TSMs 33 and 34 were reset after the predicted solar eclipse periods were over.
- Open issues
  - Essential Bus Voltage Monitor Backup (S/C Processor Current)
    - » Complete and uplink Filtering Code (End of January)
  - Solar Array off-pointing
    - » Test Delta V and Yaw maneuvers with simulator
    - » Longer duration on-board test

Deployables Subsystem

- Solar array drives and HGA continue to operate nominally.

ACS Subsystem

- ACS is performing Nominally.
- Solar Eclipse 01-348 (Dec., 14th)
  - No adverse affect on Attitude performance.
  - DSSs did briefly drop to 'NOT_GOOD', and the TAM data was nominal.
- TAM to Body alignment Matrix (Table #58).
  - Updated on 01-328 (Wed. Nov, 28th)

FDS/C&DH Subsystems

- UTCF/FS Status;
  - No UTCF Adjustments were performed.
    - » Current UTCF value is 31535996.813508 sec
  - No FS Adjustments were performed.
    - » Current FS value is x'7DE'.
    - » The next Adjustment is expected on 02-060 (Sat., Mar 1st), and will be adjusted to x'7EA'.
- Planned RTS Changes
  - Nominal TDRS AOS RTS format changes to allow easier modification as DS storage status changes, and to simplify transponder offsets if required.
  - Initially will be performed with RTSs 65 - 68, other AOS RTSs may also be converted later.

RF Subsystem

- 4 Generic Late Acquisitions this month.
  - 337/232105z TDE event: Locked up 232132z.
  - 343/074117z TDE event: Locked up 074148z.
  - 357/1705z TDW event: Locked up 170543z
  - 360/1420z 171 event: Locked up 142032z.
- 1 RF Event Report this month.
  - ER#255 - TDE / 348/0935z event was lost to Shuttle operation. All data was recovered on TDW/1040z pass.
- Frequency offsets (monthly average)
  - Transponder #1 = +729.674 Hz
  - Transponder #2 = -830.553 Hz
- Upcoming Events
  - Offset of transponder 2 frequency may occur this year.

LIS Instrument

- One Routine MSFC real-time command request was performed on 01-344 (December 10th) to reduce packet sequence errors.
- No open issues

CERES/VIRS Instruments

- **CERES**.
  - Powered OFF.
- **VIRS**, continues to operate nominally.
  - Two sets of VIRS Solar Calibrations were performed on 01-354 (Thurs., Dec 20th).
  - VIRS Cold Stage Temperature is running cooler than normal.
    - » Following VIRS completion of Outgassing the Cold Stage Temperature was 2 degree cooler than it was the last time it emerged from Outgassing.
    - » Temperatures are strongly Beta angle dependant and are slowly warming toward the nominal range.
    - » Causing some problems with science data, but scientists believe they can correct the problem with a software fix.
    - » FOT continues to monitor

TMI / PR Instruments

- No Open Issues with the TMI instrument

- No Open Issues with the PR instrument.
- PR External Calibrations were performed on 01-342 (December 8th) at 01:35:55 and 03:01:33 (bins 46 and 39) and on 01-343 (December 9th) at 02:05:57 (bin 63)
- One new source of interference was reported in December (December 8th) originating at (Lat,Long): (25.19, 49.32)

Ground System

- A working group has been established which includes representatives from the FOT and Sustaining Engineering as well as Development to assess all aspects of the ground system (realtime, MP, trending/analysis, etc.) and develop a prioritized list of possibilities for upgrade and enhancements.
  - Trending system has highest priority for this year. Demonstrations to date include LTAS, DTAS, TAPS, ABE, and WinTP as a combined 4th String RT and near-realtime Trending data router
  - Decision will be made in 1st Quarter 2002 as to which system to pursue
- STTF FEDs upgrade may occur in the next few months

Upcoming Activities

- 0-2 Months
  - Migrate MOC from Macintosh to PC-Based server/desktops/software
  - Uplink PSIB Alternate Telemetry changes (1st Week of February)
  - Perform remaining FSW revisions due to new Kalman Filter mode of operations and Boost activities
    - » 2000 Epoch Magnetic Field Patch
    - » Table 51 DSS Tolerance Versions
    - » Table 54 Update for Roll/Pitch/Yaw to 15°/8°/8°
  - Place remaining permanent table / patch changes into EEPROM
  - Select which Trending system to purchase / implement for MOC upgrade
  - Support finalization of TRMM End of Life and Reentry Plan
  - Perform SA 55° offset long-duration test
  - Install new TDRS HGA AOS RTSs

Upcoming Activities

- 2-3 Months
  - Begin implementing new MOC trending system
  - Continue trade studies for upgrading other MOC ground system and software components
  - Participate in End of Life Plan review(s)
  - End Of Life Plan Testing, and Simulations continue
  - Continue to close open CCRs, MOCRs, and MSR Action Items